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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Michael H. Gurin

4237

7590

10/12/2006

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EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT

PAPER NUMBER

1751

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/642,560

Applicant(s)

GURIN, MICHAEL H.

Examiner

Kallambella Vijayakumar

Art Unit

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-9,13,15-22 and 24-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,13,15-22, 24-26 and 28-29 is/are rejected.
- 7) ☒ Claim(s) 9 and 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 1751

***Detailed Action***

- Claims 1, 8-9 and 24-25 were amended. Claims 26-29 were newly added.

Claims 1, 3-9, 13, 15-22 and 24-29 are currently pending with the application.

***Response to Arguments***

Applicant's arguments with respect to claims have been considered fully, but are moot in view of the new ground(s) of rejection that follows. Applicant's amendment overcomes the rejections under 112-II paragraph cited in the previous action.

Applicant's argument (Response, Pg-7, Para-3) and amendment fails to overcome the prior art by Hawkins et al (US 5,976,419), because prior art Al particle with a micron diameter and polyaniline/ conductive media are within the scope of the instant claims by the applicants. Applicant's argument that the prior art does not teach a specialized function of the nanocomposite is not persuasive, because it is not the limitation of the instant claims by the applicant (Response, Pg-8, Para-1)

***Claim Rejections - 35 USC § 102***

***Claim Rejections - 35 USC § 103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 1751

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 1, 3-6, 13 and 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by, or under 35 U.S.C. 103(a) as obvious over Hawkins et al (US 5,976,419).

Hawkins et al teach a coating composition containing Al-120 aluminum powder (1-2 micron dia, See Data Sheet), polyaniline powder, a resin and additives such as surfactants and plasticizers (Col-4, Ln 21-25; Col-7, Example-I, II and III). The presence of a nanoscale surface oxide passivation layer over the Al metal powder will be inherent and this meets the limitation of thickness of the nanoscale layer in claim-1 (See Martinez et al, US 5,294,374; C-10, Ln 11-22). A particle size of 2-10 nm for polyaniline powder will be anticipated that meets the limitation of the nanoscale conductive medium and quantum dots in the claims (See Tanegamashima et al, US 6,211,274, C-4, Ln 36-44). The addition of surfactant meets the limitation of functionalization of polyaniline in claim-3, and the thickness of the nanoscale layer will be anticipated over the nanoscale particle size of the polyaniline, and blending of the components meets the limitation of multiple layer nanocomposite in claim-4.

With regard to the method steps in claims 5-6, the examiner assert that the prior art composition will be identical to that produced by the applicants treatments of the nanocomposite.

Art Unit: 1751

With regard to process steps in claims 15-18, the examiner asserts that the prior art composition will be identical to that produced by the applicant's treatments. All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Hawkin's et al be insufficient to arrive at the limitations of the instant claims by the applicant's, it would be obvious to a person of ordinary skilled in the art to substitute the polyaniline of the Hawkin's composition with the commonly available polyaniline powders including that disclosed by Tanegamashima et al (See US 6,211,274, C-4, Ln 36-44) as functional equivalent with reasonable expectation of success.

2. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins et al (US 5,976,419).

The disclosure on the coating composition by Hawkins et al as set forth in rejection-1 under 35 USC 102(b)/103(a) is herein incorporated.

The prior art specifically does not teach energy conversion products per the claims. However, the prior art teaches creating protective galvanic cell over metal against corrosion.

It would be obvious to a person of ordinary skilled in the art to coat surfaces against corrosion with the coatings of Hawkins including the parts surfaces of solar cell to protect from out door corrosion with reasonable expectation of success that meets the limitation of claim 19. With regard to treatments in claims 20-22, the examiner asserts that the art product will be similar to those produced by the applicant's process steps.

3. Claims 1, 3-8, 13, 15-22, 24-26 and 28-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Tessler et al (US 6,777,706).

The prior art teaches an optical device containing a uniform dispersion of light transmittive nanoparticles comprising PPV-TiO<sub>2</sub> (Abstract-Fig). The semiconducting TiO<sub>2</sub> and ZnS nanoparticles had a particle size distribution in the range of 1-100 nm, preferably had a unimodal distribution at 5 or 10 nm (C-4, Ln 24-29). The nanoparticle was surface modified by adsorbing an agent over its surfaces. The

Art Unit: 1751

surface modifying agents included surfactants, silylating, a dye, or chemical functional material (C-4, Ln 34-39). A monolayer thick AOT surfactant coating on the titania nanoparticle was reported in an example (C-9, Ln 53-55) that meets the limitation of nanoscale layer in the instant claims. The prior art further teaches making a coating solution by mixing monolayer-AOT-coated-Titania-MeOH with a precursor PPV-MeOH-AOT solution and coating a 600-700Å thick film over a surface that meets the limitation of an enhanced nanocomposite. PPV-MeOH-AOT meets the limitation of a nanoscale conductive media and the nanoscale functionalized layer, because PPV is the same polymer/monomer taught by the applicants (See, Specification, Pg-7, Example-2,3) and thickness of the nanoscale layer will be anticipated over the monolayer of surfactant being adsorbed the PPV-nanoparticle. The above composition and structure meets the limitation of claims 1 and 3.

With regard to claims-4,7 and 8, the prior art teaches alternating layered structure of PPV <conductive> and PPV/TiO<sub>2</sub> <semiconductor> with a thickness of 600-700Å, and further including a transparent conductive layer over the nanocomposite layer (C-14, Ln 40-43, Ln 57-60; Fig-4).

With regard to the process steps in claims 5-6 and 15-18, the examiner asserts that the prior art composition will be identical to that produced by the applicants' treatments of the nanocomposite.

With regard to Claim-13, the prior art teaches nanoparticles with a particle size of 1-10 nm.

With regard to claim-19, the prior art teaches a photon generator (C-14, Ln 65-67).

With regard to the process steps in claims 20-21, the examiner asserts that the prior art composition will be identical to that produced by the applicants' treatments of the nanocomposite.

With regard to claim 22, the prior art composition is identical and having same utility, and the examiner asserts that the instant claimed byproducts will be produced in the prior art product.

With regard to claims 24 and 25, the prior art teaches a photon generator with alternate PPV/PPV-TiO<sub>2</sub> layers (C-14, Ln 65-67; C-14, Ln 40-43, Ln 57-60; Fig-4).

With regard to Claim-26, the prior art teaches nanoparticles with a particle size of 1-10 nm.

With regard to the process steps in claims 28-29, the examiner asserts that the prior art composition/structure will be identical to that produced by the applicants' treatments of the nanocomposite.

Art Unit: 1751

***Allowable Subject Matter***

Claims 9 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim.

The prior art of record neither teaches nor fairly suggestive of a matrix comprising alternate layers of nanocomposite doped with conductive additives with a layer of nanocomposite doped semiconductor additives and each layer with a thickness of less than 10 nm.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on 8.30-6.00 Mon-Thu, 8.30-5.00 Alt Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas McGinty can be reached on 571-272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1751

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KMV  
September 30, 2006.

  
DOUGLAS MCGINTY  
SUPERVISORY PATENT EXAMINER

1751